UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,002	05/29/2007	Takashi Saito	450119-05581	4189

7590 04/26/2010

William S Frommer
Frommer Lawrence & Haug LLP
745 Fifth Avenue
New York, NY 10151

EXAMINER	
ROE, JESSEE RANDALL	
ART UNIT	PAPER NUMBER
1793	

MAIL DATE	DELIVERY MODE
04/26/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/594,002	SAITO ET AL.	
	Examiner	Art Unit	
	JESSEE ROE	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 March 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 15* is/are pending in the application.

4a) Of the above claim(s) *1-7,13 and 15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-12* is/are rejected.

7)☒ Claim(s) *11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *25 September 2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

Claims 8-12, drawn to a solder melting tank are currently under examination; claims 1-7 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a method for manufacturing austenitic stainless steel; claims 13 and 15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a non-elected automatic soldering apparatus; claim 15 has been preliminarily amended and claim 14 is canceled. Election of claims 8-12, drawn to a solder melting tank, was made in the Remarks filed 25 March 2010 with traverse.

The Applicant primarily argues that the claims of Groups II and III should examined together because the Group II invention and the Group III invention are directed to substantially the same invention, but are of different scope; a search for the subject matter of the Group II claims clearly overlaps with a search for the subject matter of the Group III claims; the Examiner should reformulate the restriction requirement such that claims 8-12, 13 and 15 are all in the same group; and it is common U.S. patent practice to present claims ranging from a narrow scope to broad scope directed to different features and aspects.

In response, the Examiner notes that the Group III invention, the automatic soldering apparatus, does not require an immersion type heater installed in the solder bath, as is present in the Group II invention and the Group II invention has utility in of itself as a manual soldering tank. Although some of the searches for the Group III invention may overlap the Group II invention in part, the extent of the search of the

Group III invention would require the search of apparatuses, methods, and alloys of other classes and subclasses to determine the patentability of the Group III claims. To examine all sets of claims in the same application would require not only additional searching but also would require consideration of additional 112 issues, prior art, formulation of rejections, etc. Therefore, the Applicant's election of Group II, claims 8-12, drawn to a solder melting tank, with traverse, is acknowledged and is therefore made **Final**.

Specification

The disclosure is objected to because of the following informalities: [0029] of the disclosure refers to "claim 1"; [0030] of the disclosure refers to "claim 8"; and [0031] refers to "claim 13". However, the claims referred to in the disclosure would not necessarily correspond with the claims at issue. Therefore, these references to the pending claims should be omitted.

Claim Objections

Claim 11 is objected to because of the following informalities: "as" in line 2 of claim 11 should be changed to "has". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to the recitations "and an immersion type heater" in line 2 of claim 8 and “the immersion type heater" in line 4 of claim 8, the addition of the word “type” to an otherwise definite expression extends the scope of the expression so as to render it indefinite. MPEP 2173.05(b)(E).

With respect to the recitation “that in the solder bath and the immersion type heater, respectively, austenitic stainless steel having a nitride-reformed layer and a passivation is used on the surface thereof; and that the nitride-reformed layer includes chromium and nitrogen as their solid solutions but excludes chromium compound.” in lines 4-7 in claim 8, it is unclear if the austenitic stainless steel having a nitride-reformed layer and a passivation film is present on the surface of the solder bath, the heater, or both since the claim only refers to a single surface and both the solder bath and the heater would have a surface.

With respect to the recitation “wherein in a duct with nozzle contained in the solder bath and installed in the melted solder, austenitic stainless steel having a nitride-reformed layer and a passivation film is used on the surface thereof." in claim 9, it is unclear if austenitic stainless steel having a nitride-reformed layer and a passivation film is present on the inner surface the duct, the outer surface of the duct, the inner surface of the nozzle, the outer surface of the nozzle, and/or on the surface of the solder bath.

With respect to the recitation "wherein in a jet agitation shaft and a jet agitation fin of melted solder, which are installed in the solder bath, austenitic stainless steel having a nitride-reformed layer and a passivation film is used on the surface thereof." in claim 10, it is unclear if the austenitic stainless steel having a nitride-reformed layer and a passivation film is present on the inner surface of the jet agitation shaft, the outer surface of the jet agitation shaft, the surface of the jet agitation fin, and/or the surface of the solder bath.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa (US 2004/0211816) in view of Fujioka et al. (US 3,989,514) and Tahara et al. (US 5,376,188).

In regards to claim 8-10 and 12, Ogawa ('816) discloses a soldering apparatus having a soldering reservoir (solder tank) having a plurality of heaters in the reservoir [0002]. Ogawa ('816) further discloses that the heaters, nozzle and pump (which includes the impeller and the shaft) are made of stainless steel and each would be covered with a chromium oxide layer (passivation layer) and this layer would be protected with a nitride layer ([0003], [0006] and [0013]). The Examiner notes that

soldering would require heating to high temperatures.

Ogawa ('816) discloses a soldering apparatus as set forth above, but Ogawa ('816) does not specify that the stainless steel would be austenitic stainless steel or that the "nitride-reformed layer includes chromium and nitrogen as their solid solutions, but excludes chromium compound".

Fujioka et al. ('514) teaches using an austenitic stainless steel having not more than 0.15 weight percent carbon, 1.5 to 4 weight percent silicon, not more than 2 weight percent manganese, 17 to 30 weight percent nickel, 24 to 32 weight percent chromium 0.5 to 2.5 weight percent aluminum, 0.001 to 0.100 weight percent calcium, 0.001 to 0.100 weight percent of a rare earth metal, 0 to 1 weight percent of at least one of titanium, zirconium, hafnium, niobium and tantalum, and the balance iron. Fujioka et al. ('514) further discloses such alloys would have superior resistance and would stand prolonged use under the circumstances where continuous or cyclical heating is endured (abstract and col. 1, lines 6-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the austenitic stainless steel, as disclosed by Fujioka et al. ('514), as the stainless steel material for the heaters, nozzle, and pump, as disclosed by Ogawa ('816), in order to have superior resistance and prolonged use under the circumstances where continuous or cyclical heating is endured, as disclosed by Fujioka et al. ('514) (abstract and col. 1, lines 6-22).

Tahara et al. ('188) discloses nitriding austenitic stainless steel at a temperature between 380°C and 420°C for a time period of 10 to 20 hours in order to prevent the

formation of chromium nitride and thus form a nitrided layer having superior anti-corrosion property (col. 2, lines 25-35 and col. 4, lines 13-42).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the nitride layer on the austenitic stainless steel, as disclosed by Ogawa ('816) in view of Fujioka et al. ('514), by nitriding at a temperature between 380°C and 420°C for a time period of 10 to 20 hours, as disclosed by Tahara et al. ('188), in order to prevent the formation of chromium nitride and thus form a nitrided layer having superior anti-corrosion property, as disclosed by Tahara et al. ('188) (col. 2, lines 25-35 and col. 4, lines 13-42).

Still regarding claim 8, the Examiner notes that a nitride layer with chromium and nitrogen as their solid solutions excluding chromium compound would be expected in the nitrided austenitic stainless steel of Ogawa ('816) in view of Fujioka et al. ('514) and Tahara et al. ('188) because Tahara et al. ('188) discloses nitriding using ammonia gas at the same temperatures for the same amount of time as disclosed in the instant invention Embodiments (col. 4, lines 1-42 of Tahara et al. ('188)).

In regards to claim 11, Tahara et al. ('188) discloses that the nitride layer thickness would be in the range of 10 to 50 μm depth, which overlaps the range of 5 to 15 μm as claimed (col. 4, lines 13-42).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571)272-5938.

The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Roy King/
Supervisory Patent Examiner, Art Unit 1793

/JR/